Comments on Chapter 6: Vulnerability
Draft 2001 U.S. Climate Action Report
****

Overall the chapter is heavily weighted towards beneficial impacts of climate change and towards minimizing the importance of potential risks involved. Especially telling is a bias towards assuming that the lower end of a temperature projection is more likely to be true than the higher end when no evidence is given as to why that should be the case. The summary statements at the beginning of the chapter and at the beginning of the sections are often misleading, emphasizing beneficial aspects and either minimizing or calling into question the confidence scientists have in the negative aspects. In addition, while it is assumed that the US will be able to adapt to any changes, no analysis of the potential costs or feasibility of the adaptation is described. Some discussion of the more negative aspects is included in the body of the chapter though not reflected adequately in the summary portions.

Page 2. Lines 5-7 "However, recent trends …" What studies are being referred to here? In fact "The projected rate of warming is much larger than the observed changes during the 20th century …" page 69, IPCC, Third Assessment Report Volume I, therefore recent trends are not a good indication of warming in the 21st century. In terms of projections, the temperature projections are based on The Emissions Scenarios of the Special Report on Emissions Scenarios (SRES), which consist of 6 scenario groups, and 35 total scenarios. "All should be considered equally sound." There is therefore no "best estimate" and the lower range is definitely not highlighted as more likely.

Page 2, Lines 7-9. This sentence makes a large assumption that is not based on model evidence, namely, that "future changes in mean and extreme conditions will be similar to past variations". On the contrary the models project much greater changes in both mean and extreme conditions than that experienced during the 20th century.

Page 4 and 5. The description of the El Niño cycle fails to mention that while modeling of El Niño with climate change is complex and still evolving, the IPCC TAR I (page 73) does state that "… global warming is likely to lead to greater extremes of drying and heavy rainfall and increase the risk of droughts and floods that occur with El Niño events in many regions." In addition, many models point to a mean El Niño-like response in the tropical Pacific, which would make an increase in El Niño-like conditions over the 21st century likely.

Page 6, line 39-40. "…the rising concentration of carbon dioxide (CO2) and continuing climate change are projected, on average, to contribute to the long, upward trend in crop yields." While increased temperature and CO2 concentration could contribute to increased crop yields, the other factors listed in the paragraph, especially increased climate variability (more droughts and floods), water quantity and quality issues, and increased need for fertilizers could lower crop yields. The paragraph is written in a misleading fashion.

Page 7, line 24-25 “The crop models that were used in these studies assume that the CO2 fertilization effect will be strongly beneficial …” While the CO2 fertilization effect has been shown for certain species under controlled conditions, many studies have shown that the effect may not be long-lasting, that species adapt to higher CO2 concentrations after as little as a few years, saturate in terms of productivity (do not increase beyond a certain point), and require large increases in fertilizers to realize increased CO2 benefits. Therefore if increased crop model yields are dependent on the CO2 fertilization effect, their projections are likely to be in error.

Page 7, line 34-35. “… unless there is inadequate or poorly distributed precipitation …” This is precisely what is projected by the climate models, as stated in this report as well as the IPCC and National Assessment, that periods of drought and heavy precipitation events will increase. Therefore economic studies that predict positive benefits to the agricultural sector are based on studies that do not include likely climate consequences, namely increased extreme events and weather variability.

Page 9, line 23-33. As in comment above (re Page 4 and 5), models project that El Niño-like conditions are likely to increase, exacerbating the climate variability projected here. This should be mentioned in the context of this discussion.

Page 12, line 23. The economic impact is decline and eventual loss of syrup production in New York and New England. This should be stated explicitly. (see New England Regional Assessment)

Page 20, line 17-18. Snowpacks provide a natural reservoir for water storage for the western and northern portions of the US. The site of the storage is in mountainous regions and northern portions of the US. The wording needs to be improved here for clarity.

Page 20, line 22-25. “…have implications…” change to “… have many serious and negative implications …”

Page 23, line 20. “While analyses suggest …” This sentence does not make logical sense. If we have no confidence in our estimated projections of the potential impacts of climate change on health how can we be confident that the problems can be dealt with?

Page 23, line26. While it is true that “…uncertainties remain about how the climate will change and how environmental conditions may change”, it is also true that many estimates and projections about climate change have been made and a consensus by scientists of a range of plausible outcomes for future climate has been reached (IPCC TAR 2001). Therefore projections of the extent and direction of potential impacts of climate variability and change on health, while difficult, are by no means impossible and have in fact been made in the documents this report refers to. This paragraph is unnecessarily emphasizing the “uncertainties” and not fairly reporting the scientific conclusions.

Page 23, line 27 to 30. This conclusion – that the balance between increased risk of heat-related illness and decreased risk of cold-related illness cannot be confidently assessed, does not adequately summarize what is discussed later in the chapter, namely that extreme heat causes more deaths than any other category of deaths attributable to extreme weather. In addition, as discussed later in the chapter (page 24), while some winter deaths are related to cold weather (e.g., slipping on the ice), many are related to infectious disease, which may or may not decrease with milder winters. This would suggest that increased heat would have more negative effect than decreased cold.

Page 36, Item #5. The current crop models which form the basis of the statement that climate change will be beneficial to US agriculture here do not adequately incorporate the effect of extreme events (floods, droughts), pests and pathogens, and other factors as described in the body of the National Assessment and this summary. In addition, the models assume that increased carbon dioxide will translate into sustained increases in productivity, an assumption that cannot be supported by the short-term studies done to date.